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- CS Dept of Molec, Cellular Bio, Brown Univ, Providence, RI, USA
- SO Society for Neuroscience Abstracts, (2001) Vol. 27, No. 1, pp. 998. print. Meeting Info.: 31st Annual Meeting of the Society for Neuroscience. San Diego, California, USA. November 10-15, 2001. ISSN: 0190-5295.
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- SO Society for Neuroscience Abstracts, (2001) Vol. 27, No. 1, pp. 998. print. Meeting Info.: 31st Annual Meeting of the Society for Neuroscience. San Diego, California, USA. November 10-15, 2001. ISSN: 0190-5295.
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- period in capsaicin-non-responsive neurons.
- FIG. 8 shows omega-Ctx GVIA-sensitive calcium currents in capsaicin-responsive neurons that contain and lack e37a.
- FIG. 9 shows competitive RT-PCR analysis of e37a and e37b in whole tissue and single neurons.
- FIG. 10 shows that multiple splice forms of CaV2.2 are
 expressed in dorsal root ganglia. FIG. 10a. Putative membrane topology of
- expressed in dorsal root ganglia. FIG. 10a, Putative membrane topology of the CaV2.2 subunit. The approximate location of
- constitutively expressed exons (horizontal black lines) and alternatively spliced exons, e18a, e24a, e31a and e37a/e37b (blue circles) are shown. FIG. 10b, RT-PCR analysis of e18a, e24a, and e31a in mRNA isolated from rat DRC, Primers flanked each splice site and generated the following products: 227 and 290 bp for Delta e18a and +e18a; 114 and 126 bp for Delta e24a and +e24a; and 169 and 175 bp for Delta e31 a and +e31 a. PCR-derived cDNA products were separated on a 2% agarose (e18a) or 4% Metaphor agarose gel (e24a and e31a). Results are consistent with previous analyses of these sites of alternative splicing by RTPCR and ribonuclease protection assays (Lin et al., 1997; Lin et al., 1999; Pan and Lipscombe, 2000).
- FIG. 11 shows that capsaicin-responsiveness in DRG neurons is correlated with the presence of VR1. DRG neurons were screened for capsaicin-responsiveness by whole cell recording (n=269 cells). Whole cell currents recorded from FIG. 11a, a nonresponsive neuron and FIG. 11b, a capsaicin-responsive neuron. The membrane potential was voltageclamped at-60 mV. The horizontal bar indicates the time and duration of capsaicin application (2 mu M). No inward current was detected in 141 neurons. Inward currents were induced in 128 neurons during capsaicin challenge, with an average amplitude of 986+-118 pA. FIG. 1c, PCR-derived cDNA products amplified in two sets of reactions from 5 individual neurons (lanes 1-5) using VR1 and GAPDH-specific primers. The predicted size of PCR products was 125 bp and 274 bp, respectively. The capsaicin-responsiveness of each cell is indicated between gels (+ or -). FIG. 1d, Histogram showing the percentage of non-responsive cells (grav) and capsaicin-responsive cells (red) containing VR1. PCR products were amplified in 89% of capsaicin-responsive cells (25 of 28) with VR1 primers compared to 13% of non-responsive cells (2 of 15).
- FIG. 12 shows that expression patterns of exons, e18a, e24a, and e31a, do not correlate with capsaicin-responsiveness. Representative gels showing single cell RT-PCR-derived cDNA products amplified using CaV2. 2-specific primers flanking exons FIG. 12a, eb18a; FIG. 3b, e24a; and FIG. 12c, e31a, together with histograms summarizing the distribution of exons based on capsaicin-responsiveness. Control GAPDH-specific primers are used in each single cell reaction. Products amplified from four cells are shown for each primer pair (lanes 1-4). In FIG. 12c, the first two lanes show products amplified from CaV2.2e(Delta 31a) and CaV2.2e(+e31 a) clones to establish that a 6 bp difference is resolvable in a 4% Metaphor gel. Sizes of cDNA products were respectively, 227 bp and 290 bp for Delta e18 and +e18a; 114 bp and 126 for Delta e24a and +e24a; and 169 bp and 175 bp for .e31a and +e31a. Histograms show percent cells that lack the specified exon (A) and that express both splice isoforms lacking and containing the exon (both). Histograms separate cells based on capsaicin-non-responsiveness (grav) and capsaicin-responsiveness (red). The total number of cells analyzed is shown below each histogram. Capsaicin responsiveness of each cell is indicated between gels (+ or -).
- FIG. 13 shows that exon 37a is expressed exclusively in dorsal root ganglia. FIG. 13a, Splicing pattern of mutually exclusive exons e37b and e37a of CaV2.2e(37a) based on analysis of the public rat genomic sequence (accession number NW 043710) and our sequencing (accession number AV211499). Exons are denoted with solid bars and introns with horizontal

lines. Exon lengths are 128, 97, 97, and 109 bps for e36, e37a, e37b, and e38 respectively (accession numbers AY211499 and AY211500). 37a amino acid sequence is CCR1 YKDMYSLLRCIAPPVGLGKNCPRRLAY (SEQ ID NO:46); 37b amino acid is sequence CGRISYNDMFEMLKHMSPPLGLGKKCPARVAY (SEO ID NO:47) FIG. 13b, Expression pattern of e37b and e37a in RNA isolated from various regions of the adult rat nervous system. SCG, superior cervical ganglia; DRG, dorsal root ganglia; SC, spinal cord; MD, medulla; MB, midbrain; CM, cerebellum; TH, thalamus; HC, hippocampus; CX, cortex. Primers were exon-specific for e37a and e37b. PCR-derived products were separated on a 3% agarose gel. Each lane contains equal amounts of PCR reaction, FIG. 13c and FIG. 13d, Levels of CaV2.2 mRNA containing e37a and e37b were estimated in P5 (FIG. 13c), and adult (FIG. 13d) DRG tissue by competitive RT-PCR. Each primer pair generated two PCR products, 108 bp from CaV2.2 cDNA and 135 bp from competitive template. Gel shows products amplified by RT-PCR of RNA isolated from whole DRG (500 pg per reaction=5 single cells) for e37a and e37b in the presence of serial dilutions of competitive template (10-18 to 10-22 M). In P5 tissue, FIG. 13c, the e37b competitive template product was completely depleted at 5x10-21 M by the tissue-derived e37b template. The two were approximately equal in intensity at 5x10-20 M. The e37a competitive template product was completely depleted at 5x10-22 M by the tissue-derived e37a template. The two were approximately equal in intensity at 5x10-21 M. In adult tissue, FIG. 13d, the e37b competitive template product was completely depleted at 1x10-21 M by the tissue-derived e37b template. The two were approximately equal in intensity at 5x10-20 M. The e37a competitive template product was completely depleted at 1x10-22 M by the tissue-derived e37a template. The two were approximately equal in intensity at 5x10-21 M. These gels are representative of three experiments that gave similar results. FIG. 14 shows that exon 37a is preferentially expressed in nociceptive neurons. Single neurons were analyzed by RT-PCR and the expression pattern of e37a correlated with capsaicinresponsiveness. FIG. 14a and FIG. 14b, Histogram summary showing the number of cells expressing e37b and e37a in capsaicin-non-responsive neurons (gray) and responsive neurons (red). e37a-specific primers amplified products in 32 of 58 capsaicin-responsive and 5 of 27 non-responsive neurons. FIG. 14c, Histogram summary of the number of cells expressing e37a, NaV1.8, and both e37a and NaV1.8, in 24 capsaicin-responsive cells. FIG. 14d, Representative gels showing RT-PCR products amplified with e37a, e37b and GAPDH-specific primers from four single cells (lanes 1-4). The capsaicin-responsiveness of each cell is indicated between gels (+ or -). FIG. 14e, Gels showing RT-PCR products amplified with NaV1.8, e37a, and GAPDH-specific primers from four neurons (lanes 1-4). The capsaicinresponsiveness of each neuron is indicated between gels (+ or

FIG. 15 depicts a comparison of calcium channel currents in capsaicin-non-responsive and responsive neurons. FIG. 15a, Average, peak current-voltage relationships for whole cell calcium currents measured in capsaicin-responsive (smallcircle) and non-responsive (composite) neurons of dorsal root ganglia. Average, peak current density and capacitance were, for capsaicin-responsive neurons: 135+-19 pA/pF and 18+-2 pF, n=20; for capsaicin-non-responsive neurons: 123+-17 pA/pF and 27+-3 pF, n=9. Curves are fit with the sum of two BoltzmannGHK functions. Estimated V1/2 values were-45 mV and -15 mV for low and high voltage-activated currents, respectively. Upper inset: Representative, low voltage-activated and high voltageactivated whole cell calcium currents activated by voltage steps to-40 mV and -5 mV, respectively, from a holding potential of-80 mV from a capsaicin-non-responsive neuron. Lower inset: Same as upper inset from a capsaicin-responsive neuron. Scale bars: 1 nA, 10 ms. FIG. 15b, Average, peak current voltage relationships for omega-Ctx GVIA-subtracted calcium current in capsaicin-responsive (small-circle) and non-responsive

(composite) neurons. Average, peak current densities were 111+-12 pA/pF (n=20) for capsaicin-responsive compared to 72+-8 pA/pF (n=9) for non-responsive neurons. These values are significantly different (p<0.05). The omega-Ctx GVIA-sensitive current was 71+-2% of the total whole cell calcium current in capsaicin-responsive neurons and 68+-2% of whole cell current in non-responsive neurons. Curves are fit with the sum of two Boltzmann-GHK functions. Average V1/2 and k values were calculated from fits of individual N-type currentvoltage relationships. In capsaicin-non-responsive cells, for the low voltage-activated componefit, V1/2 and k values were 25+-4 mV and 4.8+-0.5 compared to-21+2 mV and 6+-0.6 for capsaicin-responsive cells. In capsaicin non-responsive neurons average V1/2 and k values were, for the high voltage-activated component: -16+2 mV and 5.4+-0.6 compared to-15+-1 mV and 5.2+0.3 for capsaicin-responsive cells. Values of V1/2 and k were not significantly different between capsaicin-responsive and capsaicin-non-responsive neurons (p>0.05). Inset, Representative omega-Ctx GVIA-sensitive current recorded at-5 mV from a capsaicin-responsive neuron (lower trace) and nonresponsive neuron (upper trace). Scale bar: 25 pA/pF, 10 ms. Data are mean+-se.

FIG. 16 show that exon 37a expression is associated with larger N-type currents in capsaicin-responsive neurons. FIG. 16a, Average, peak current-voltage relationships of omega-Ctx GVIAsensitive calcium current in capsaicin-responsive neurons that contain (small-circle) and lack (composite) e37a. Average peak current density at 0 mV and capacitance of responsive neurons that contain e37a were 122+-11 pA/pF and 20+-3 pF (n=8) compared to 76+-3 pA/pF and 18+-1 pF for neurons that lack e37a (n=8). Peak current densities are significantly greater in neurons containing e37a (p<0.05). Current densities were significantly different between splice isoforms when compared at-10 mV, -5 mV, 0 mV, +5 mV, and +10 mV (p<0.05). Curves are Boltzmann-linear IV fits. Average V1/2 and k values are-12.7+1.8 mV and 4.6+-0.4, n=8, for neurons containing e37a compared to-13.6+-1.7 mV and 5.4+-0.3, n=8, for neurons lacking e37a. V1/2 and k values are not significantly different between the two groups (p>0.05). Inset shows examples of toxin-subtracted currents from neurons containing (small-circle) and lacking (composite) exon 37a. Scale bars are 10 ms and 20 pA/pF. FIG. 16b, Averages of time constants estimated from fits of the activation phase of toxin-subtracted N-type currents induced by step depolarizations to indicated test potentials, from capsaicin-responsive neurons containing (small-circle) and lacking (composite) exon 37a. FIG. 16c, Average time constants estimated from fits of the inactivation kinetics of toxin-subtracted N-type currents induced by step depolarizations to indicated test potentials, from capsaicinresponsive neurons containing (small-circle) and lacking (composite) exon 37a. FIG. 16d, Representative gels showing RTPCR products amplified from four single cells (lanes 1-4) with primers specific for e37a, e37b, and GAPDH. Cells were used in the analysis shown in FIG. 16a. Data are mean+-se.

FIG. 17 shows that CaV2.2e(37a) clones induce N-type currents in Xenopus occytes that are significantly larger compared to CaV2. 2e(37b). FIG. 17a, Average peak current-voltage relationships in occytes expressing CaV2.2e(37a) () and CaV2.2e(37b) (composite). After 5 days post injection, average CaV2.2e(37a) apeak currents were 211+-2 nA (n-8) compared to 134+4 nA for CaV2.2e(37b) (n-8). Peak CaV2.2e(37a) currents were significantly greater than CaV2.2e(37b) at day 4, 5 and 6 after injection (p<0.05). The dotted line shows the predicted current voltage-relationship of CaV2.2e(37b) accludated using the Boltzmann activation curve of CaV2.2e(37a) shown in FIG. 17b. This predicted curve demonstrates that an 8 mV left shift in voltage-dependence of channel activation (see FIG. 17b) is insufficient to account for the significantly larger currents of CaV2.2e(37a) compared to CaV2.2e(37b). Inset: Representative CaV2.2e(37a) and CaV2.2e(37b) currents induced by

step depolarizations to peak current (-5 mV for CaV2.2e(37a) and 0 mV for CaV2.2e(37b)) from a holding potential of-80 mV. Scale bar: 50 nA, 20 ms. V1/2 and k values were estimated from Boltzmann-GHK fits to individual data sets. Average V1/2 values are-17.9+-0.6 mV, n=8, for CaV2.2e(37a) and -9.7+-0.4 mV, n=8, for CaV2.2e(37b). k values are 5.3+-0.1 for CaV2.2e(37a) and 5. 1+-0.1 for CaV2.2e(37b). Average, macroscopic activation time constants Tact are 7.2+-0.5 ms for CaV2.2e(37a), n=8, and 10.6+0.5 ms for CaV2.2 e(37b), n=9. These values are significantly different (p<0.05). Peak currents in occytes expressing CaV2. 2e(37a) were 186+-2 nA (n=4), 211+-2 nA (n=8), and 387+-20 nA (n=8) at days 4, 5 and 6 days post injection, respectively. Compared to 68+-2 nA (n=3), 134+-2 nA (n=8), and 204+-10 nA (n=8) at 4, 5 and 6 days post injection, respectively, in occytes expressing CaV2.2e(37b). In all cases values between splice isoforms were significantly different on a given day (p<0.05). FIG. 17b, Normalized, averaged activation curves for N-type currents in oocytes expressing CaV2.2e(37a) (smallcircle) and CaV2.2e(37b) (composite). Curves were generated from slope conductances calculated from peak current-voltage relationships shown in FIG. 8a, and assuming a reversal potential of +40 mV. Boltzmann functions were fit to individual curves and used to calculate average values for V1/2 and k. These were for CaV2.2e(37a):-19.7+-0.6 mV and 4.4+-0.2; and for CaV2.2e(37b):-11.7+-0.5 mV and 4.7+-0.1. V1/2 values are significantly different (p<0.05); k values are not significantly different. FIG. 17c. Normalized, averaged steadystate inactivation curves for N-type currents in oocytes expressing CaV2.2e(37a) (small-circle) and CaV2.2e(37b) (composite). Curves were generated from peak currents elicited by 300 ms test pulses to-5 mV (CaV2.2e(37a), n=12) or 0 mV (CaV2.2e(37b), n=11) after 20 second conditioning prepulses to voltages ranging from-100 mV to +20 mV. Barium (5 mM) was the charged carrier. Peak currents are plotted as a fraction of the maximum current at the indicated holding potentials. V1/2 and k values were estimated from Boltzmann fits to data from individual cells. Average V1/2 and k values were for CaV2. 2e(37a):-72.7+-0.8 mV and 8.1+-0.4; and for CaV2.2e(37b):-72. 0+-0.4 mV 8.1+-0.6. Values are not significantly different. Inactivation kinetics were also measured, CaV2.2e(37a): tau inact-1=393+-17 ms and tau inact-2=89+-5 ms compared to 384+-8 ms and 82+-2 ms for CaV2.2e(37b). Values are not significantly different between splice isoforms. These data are representative of four separate injections. Data are mean+-se. !

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L1
    ANSWER 4 OF 25 USPATFULL on STN
AN
       2007:291200 USPATFULL
       Soluble salts of thieno[2,3-d]pyrimidine derivatives
ΤI
IN
       Cooper, Martin Ian, Cambridgeshire, UNITED KINGDOM
       Frampton, Christopher Stephen, Suffolk, UNITED KINGDOM
PA
       Dynogen Pharmaceuticals, Inc., Waltham, MA, UNITED STATES, 02451 (U.S.
       corporation)
PΤ
      US 20070254899
                          A1 20071101
      US 2007-728966
AΙ
                          A1 20070327 (11)
      US 2006-788565P
PRAI
                          20060331 (60)
       US 2006-808905P
                          20060526 (60)
      Utility
FS
       APPLICATION
       LAHIVE & COCKFIELD, LLP, ONE POST OFFICE SOUARE, BOSTON, MA, 02109-2127,
LREP
CLMN
      Number of Claims: 19
ECL
      Exemplary Claim: 1
DRWN
       1 Drawing Page(s)
LN.CNT 2940
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
```

ANSWER 5 OF 25 USPATFULL on STN

```
AN
       2007:291192 USPATFULL
тт
       Crystalline forms of 4-(2-fluorophenyl)-6-methyl-2-(piperazin-1-
       v1)thieno[2,3-d]pvrimidine
       Cooper, Martin Ian, Cambridgeshire, UNITED KINGDOM
       Frampton, Christopher Stephen, Suffolk, UNITED KINGDOM
       Dynogen Pharmaceuticals, Inc., Waltham, MA, UNITED STATES, 02451 (U.S.
PA
       corporation)
       US 20070254891
                           A1 20071101
AΙ
       US 2007-728947
                           A1 20070327 (11)
PRAI
       US 2006-788338P
                           20060331 (60)
       US 2006-808603P
                           20060526 (60)
       Utility
FS
       APPLICATION
LREP
       LAHIVE & COCKFIELD, LLP, ONE POST OFFICE SQUARE, BOSTON, MA, 02109-2127,
CLMN
       Number of Claims: 33
ECL
       Exemplary Claim: 1
       11 Drawing Page(s)
DRWN
LN.CNT 3877
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 6 OF 25 USPATFULL on STN
       2007:243755 USPATFULL
AN
ΤI
       Peptides and Calcium Regulation in Mammalian Cells
IN
       BEST, Philip M., Urbana, IL, UNITED STATES
       JONES, Janice, Champaign, IL, UNITED STATES HANSEN, Jared P., Peoria, IL, UNITED STATES
       LIN, Zuojun, Urbana, IL, UNITED STATES
       WEIS, Karen E., Champaign, IL, UNITED STATES
       CHU, Po-Ju, Taipei, TAIWAN, PROVINCE OF CHINA
PA
       THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS, Urbana, IL, UNITED
       STATES (U.S. corporation)
ΡI
       US 20070213267
                           A1 20070913
       US 2006-537323
ΑI
                           A1 20060929 (11)
       US 2005-722707P
PRAI
                           20050930 (60)
DT
       Utility
FS
       APPLICATION
LREP
       GREENLEE WINNER AND SULLIVAN P C, 4875 PEARL EAST CIRCLE, SUITE 200,
       BOULDER, CO, 80301, US
CLMN
       Number of Claims: 35
ECL
       Exemplary Claim: 1
DRWN
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LN.CNT 4435
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 7 OF 25 USPATFULL on STN
AN
       2007:107481 USPATFULL
ΤI
       Pyrimidines and pyrazines useful as modulators of ion channels
TN
       Wilson, Dean, San Diego, CA, UNITED STATES
       Termin, Andreas, Encinitas, CA, UNITED STATES
       Fanning, Dewey, San Marcos, CA, UNITED STATES
       Krenitsky, Paul, San Diego, CA, UNITED STATES
       Joshi, Pramod, San Diego, CA, UNITED STATES
       Sheth, Urvi, San Diego, CA, UNITED STATES
PТ
       US 20070093454
                           A1 20070426
AΙ
       US 2006-418163
                           A1 20060504 (11)
PRAT
       US 2005-678104P
                           20050504 (60)
DT
       Utility
       APPLICATION
LREP
       VERTEX PHARMACEUTICALS INC., 130 WAVERLY STREET, CAMBRIDGE, MA,
       02139-4242, US
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CLMN
      Number of Claims: 32
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CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 8 OF 25 USPATFULL on STN
AN
       2007:95187 USPATFULL
ΤI
       Pyridines useful as modulators of ion channels
IN
       Wilson, Dean, San Diego, CA, UNITED STATES
       Termin, Andreas, Encinitas, CA, UNITED STATES
       Fanning, Dewey, San Marcos, CA, UNITED STATES
       Krenitsky, Paul, San Diego, CA, UNITED STATES
       Joshi, Pramod, San Diego, CA, UNITED STATES
PΤ
       US 20070082889
                         A1 20070412
      US 2006-418278
                          A1 20060504 (11)
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PRAI
      US 2005-678118P
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      Utility
DT
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FS
LREP
      VERTEX PHARMACEUTICALS INC., 130 WAVERLY STREET, CAMBRIDGE, MA,
       02139-4242, US
CLMN
      Number of Claims: 34
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LN.CNT 2750
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 9 OF 25 USPATFULL on STN
AN
       2006:254921 USPATFULL
       Ouinazolines useful as modulators of ion channels
IN
       Gonzalez, Jesus E. III, San Diego, CA, UNITED STATES
       Wilson, Dean M., San Diego, CA, UNITED STATES
       Termin, Andreas P., Encinitas, CA, UNITED STATES
       Grootenhuis, Peter D. J., San Diego, CA, UNITED STATES
       Zhang, Yulian, San Diego, CA, UNITED STATES
       Petzoldt, Benjamin J., La Jolla, CA, UNITED STATES
       Fanning, Lev Tyler Dewey, San Diego, CA, UNITED STATES
       Neubert, Timothy D., San Diego, CA, UNITED STATES
       Tung, Roger D., San Diego, CA, UNITED STATES
      Martinborough, Esther, San Diego, CA, UNITED STATES
       Zimmerman, Nicole, San Diego, CA, UNITED STATES
ΡI
      US 20060217377
                          A1 20060928
AΙ
      US 2004-935008
                          A1 20040902 (10)
      Continuation-in-part of Ser. No. US 2004-792688, filed on 3 Mar 2004,
RLI
       PENDING
      US 2003-451458P
PRAT
                           20030303 (60)
      US 2003-463797P
                           20030418 (60)
      Utility
FS
      APPLICATION
LREP
      VERTEX PHARMACEUTICALS INC., 130 WAVERLY STREET, CAMBRIDGE, MA,
       02139-4242, US
CLMN
      Number of Claims: 252
ECL
      Exemplary Claim: 1
DRWN
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LN.CNT 10122
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
    ANSWER 10 OF 25 USPATFULL on STN
AN
       2006:182531 USPATFULL
тт
       Quinazolines useful as modulators of ion channels
TN
      Wilson, Dean, San Diego, CA, UNITED STATES
```

```
Fanning, Lev, San Marcos, CA, UNITED STATES
       Krenitsky, Paul, San Diego, CA, UNITED STATES
       Boger, Joshua, Concord, MA, UNITED STATES
       US 20060154935
                          A1 20060713
       US 2005-216899
                          A1 20050831 (11)
AΙ
PRAI
      US 2004-607245P
                          20040902 (60)
      Utility
       APPLICATION
LREP
       VERTEX PHARMACEUTICALS INC., 130 WAVERLY STREET, CAMBRIDGE, MA.
       02139-4242, US
CLMN
      Number of Claims: 65
ECL
      Exemplary Claim: 1
DRWN
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LN.CNT 3814
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 11 OF 25 USPATFULL on STN
       2005:331503 USPATFULL
AN
       Voltage-dependent calcium channel beta subunit functional core
IN
       Hirsch, Joel A., Raanana, ISRAEL
PΤ
      US 20050288489
                           A1 20051229
ΑI
      US 2005-126313
                           A1 20050511 (11)
PRAI
      US 2004-569642P
                           20040511 (60)
DT
      Utility
FS
       APPLICATION
LREP
       PEARL COHEN ZEDEK, LLP, 10 ROCKEFELLER PLAZA, SUITE 1001, NEW YORK, NY,
       10020, US
CLMN
      Number of Claims: 16
ECL
      Exemplary Claim: 1
DRWN
      17 Drawing Page(s)
LN.CNT 5096
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 12 OF 25 USPATFULL on STN
AN
       2005:324887 USPATFULL
ΤI
      Method of treating lower urinary tract disorders
IN
       Landau, Steven B., Wellesley, MA, UNITED STATES
       Miller, Cheryl L., Natick, MA, UNITED STATES
       Fraser, Matthew O., Apex, NC, UNITED STATES
PA
       Dynogen, Inc. (U.S. corporation)
      US 20050282799
ΡI
                           A1 20051222
ΑI
      US 2005-124580
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      Continuation of Ser. No. US 2004-863771, filed on 7 Jun 2004, PENDING
       Continuation of Ser. No. US 2004-817332, filed on 2 Apr 2004, GRANTED,
       Pat. No. US 6846823
      US 2004-536341P
PRAT
                          20040113 (60)
      US 2003-496502P
                          20030820 (60)
      US 2003-461022P
                          20030404 (60)
DT
      Utility
      APPLICATION
FS
      JONES DAY, 222 EAST 41ST ST, NEW YORK, NY, 10017, US Number of Claims: 7
LREP
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ECL
      Exemplary Claim: 1-70
DRWN
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LN.CNT 3128
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 13 OF 25 USPATFULL on STN
AΝ
       2005:313100 USPATFULL
ΤТ
       Method for inhibiting detrusor muscle overactivity
TN
       Landau, Steven B., Wellesley, MA, UNITED STATES
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Miller, Cheryl L., Natick, MA, UNITED STATES
       Fraser, Matthew O., Apex, NC, UNITED STATES
PΤ
      US 20050272719
                          A1 20051208
ΑТ
      US 2005-122940
                          A1 20050504 (11)
RLI
      Continuation of Ser. No. US 2004-863771, filed on 7 Jun 2004, PENDING
       Continuation of Ser. No. US 2004-817332, filed on 2 Apr 2004, GRANTED,
       Pat. No. US 6846823
PRAI
      US 2004-536341P
                          20040113 (60)
      US 2003-496502P
                          20030820 (60)
      US 2003-461022P
                          20030404 (60)
DT
      Utility
      APPLICATION
LREP
      JONES DAY, 222 EAST 41ST ST, NEW YORK, NY, 10017, US
CLMN
      Number of Claims: 37
      Exemplary Claim: 1-70
DRWN
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LN.CNT 3180
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 14 OF 25 USPATFULL on STN
AN
       2005:306394 USPATFULL
       Peptides of CaV2.2 that inhibit pain
       Garry, Mary, Dallas, TX, UNITED STATES
IN
       Bezprozvanny, Ilya, Dallas, TX, UNITED STATES
       Board of Regents, The University of Texas System (U.S. corporation)
PΤ
      US 20050267036
                          A1 20051201
      US 2005-96281
AΤ
                           A1 20050331 (11)
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      US 2004-558383P
                          20040401 (60)
DT
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FS
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LREP
      FULBRIGHT & JAWORSKI L.L.P., 600 CONGRESS AVE., SUITE 2400, AUSTIN, TX,
       78701, US
CLMN
      Number of Claims: 24
ECL
      Exemplary Claim: 1
DRWN
      7 Drawing Page(s)
LN.CNT 3877
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 15 OF 25 USPATFULL on STN
ΑN
       2005:240044 USPATFULL
      Methods for the identification of compounds useful for the suppression
       of chronic neuropathic pain and compositions thereof
IN
       Barclay, Jane, Novartis Institute for Medical Sciences, 5 Gower Place,
       London, UNITED KINGDOM WC1E 6BN
       Ganju, Pamposh, London, FRANCE
PΤ
      US 20050208044
                           A1 20050922
ΑТ
      US 2003-506551
                           A1 20030318 (10)
      WO 2003-EP2834
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                               20050426 PCT 371 date
      US 2002-365487P
                           20020319 (60)
PRAI
DT
      Utility
FS
       APPLICATION
      NOVARTIS, CORPORATE INTELLECTUAL PROPERTY, ONE HEALTH PLAZA 104/3, EAST
LREP
       HANOVER, NJ, 07936-1080, US
CLMN
      Number of Claims: 17
ECL
      Exemplary Claim: 1
DRWN
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LN.CNT 2564
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
L1 ANSWER 16 OF 25 USPATFULL on STN
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AN
       2005:57330 USPATFULL
ΤТ
       Pyrimidines useful as modulators of voltage-gated ion channels
TN
       Wilson, Dean Mitchell, San Diego, CA, UNITED STATES
       Martinborough, Esther, San Diego, CA, UNITED STATES
       Neubert, Timothy Donald, San Diego, CA, UNITED STATES
       Termin, Andreas Peter, Encinitas, CA, UNITED STATES
       Gonzalez, Jesus E., III, San Diego, CA, UNITED STATES
       Zimmerman, Nicole, San Diego, CA, UNITED STATES
      US 20050049247
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AΙ
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DT
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FS
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LREP
       VERTEX PHARMACEUTICALS INC., 130 WAVERLY STREET, CAMBRIDGE, MA,
       02139-4242
CT.MNI
      Number of Claims: 127
ECL
      Exemplary Claim: 1
DRWN
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LN.CNT 5298
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 17 OF 25 USPATFULL on STN
AN
       2005:31472 USPATFULL
       Method of treating lower urinary tract disorders
ΤN
       Landau, Steven B., Wellesley, MA, UNITED STATES
       Miller, Cheryl L., Natick, MA, UNITED STATES
       Fraser, Matthew O., Apex, NC, UNITED STATES
PA
       Dynogen, Inc. (U.S. corporation)
                           A1 20050203
ΡI
      US 20050026909
      US 7115606
                           B2 20061003
      US 2004-863770
                          A1 20040607 (10)
ΑI
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RLI
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PRAI
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      US 2003-496502P
                           20030820 (60)
      US 2003-461022P
                          20030404 (60)
DT
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FS
      APPLICATION
LREP
      JONES DAY, 222 EAST 41ST ST, NEW YORK, NY, 10017
CLMN
      Number of Claims: 49
      Exemplary Claim: CLM-01-70
ECL
DRWN
      2 Drawing Page(s)
LN.CNT 3245
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 18 OF 25 USPATFULL on STN
AN
       2005:24028 USPATFULL
ΤI
       Method of treating lower urinary tract disorders
       Landau, Steven B., Wellesley, MA, UNITED STATES
TM
       Miller, Cheryl L., Natick, MA, UNITED STATES
       Fraser, Matthew O., Apex, NC, UNITED STATES
PA
       Dynogen, Inc. (U.S. corporation)
      US 20050020577
                           A1 20050127
A1 20040607 (10)
ΑI
      US 2004-863771
      Continuation of Ser. No. US 2004-817332, filed on 2 Apr 2004, PENDING
RLI
      US 2004-536341P
                          20040113 (60)
       US 2003-496502P
                           20030820 (60)
       US 2003-461022P
                           20030404 (60)
DT
      Utility
FS
      APPLICATION
LREP
      JONES DAY, 222 EAST 41ST ST, NEW YORK, NY, 10017
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CLMN
     Number of Claims: 27
ECL
       Exemplary Claim: CLM-01-70
DRWN
       2 Drawing Page(s)
LN.CNT 3306
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 19 OF 25 USPATFULL on STN
AN
       2004:315302 USPATFULL
       Method of treating lower urinary tract disorders
IN
       Brettman, Lee R., Sudbury, MA, UNITED STATES
       Landau, Steven B., Wellesley, MA, UNITED STATES
       Fraser, Matthew O., Apex, NC, UNITED STATES
PA
       DYNOGEN PHARMACEUTICALS, INC., BOSTON, MA (U.S. corporation)
ΡI
       US 20040248979
                        A1 20041209
ΑI
       US 2004-859922
                          A1 20040603 (10)
PRAI
       US 2003-475636P
                          20030603 (60)
DT
      Utility
       APPLICATION
FS
LREP
       HAMILTON, BROOK, SMITH & REYNOLDS, P.C., 530 VIRGINIA ROAD, P.O. BOX
       9133, CONCORD, MA, 01742-9133
CLMN
       Number of Claims: 61
ECL
       Exemplary Claim: 1
DRWN
       3 Drawing Page(s)
LN.CNT 3699
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 20 OF 25 USPATFULL on STN
       2004:315214 USPATFULL
AN
ΤI
       Ouinazolines useful as modulators of ion channels
IN
       Gonzalez, Jesus E., III, San Diego, CA, UNITED STATES
       Wilson, Dean Mitchell, San Diego, CA, UNITED STATES
       Termin, Andreas Peter, Encinitas, CA, UNITED STATES
       Grootenhuis, Peter Diederik Jan, San Diego, CA, UNITED STATES
       Zhang, Yulian, San Diego, CA, UNITED STATES
       Petzoldt, Benjamin John, La Jolla, CA, UNITED STATES
       Fanning, Lev Tyler Dewey, San Diego, CA, UNITED STATES
       Neubert, Timothy Donald, San Diego, CA, UNITED STATES
       Tung, Roger, San Diego, CA, UNITED STATES
       Martinborough, Esther, San Diego, CA, UNITED STATES
       Zimmermann, Nicole, San Diego, CA, UNITED STATES
PΙ
       US 20040248890
                          A1 20041209
AΙ
       US 2004-792688
                          A1 20040303 (10)
PRAI
       US 2003-451458P
                          20030303 (60)
       US 2003-463797P
                          20030418 (60)
DT
       Utility
FS
       APPLICATION.
LREP
       VERTEX PHARMACEUTICALS INC., 130 WAVERLY STREET, CAMBRIDGE, MA,
       02139-4242
CLMN
       Number of Claims: 251
ECL
       Exemplary Claim: 1
DRWN
      No Drawings
LN.CNT 9550
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
     ANSWER 21 OF 25 USPATFULL on STN
AN
       2004:268326 USPATFULL
       Method of treating lower urinary tract disorders
TΝ
       Landau, Steven B., Wellesley, MA, UNITED STATES
       Miller, Cheryl L., Natick, MA, UNITED STATES
       Fraser, Mathew O., Apex, NC, UNITED STATES
PA
       Dynogen Pharmaceuticals, Inc., Boston, MA (U.S. corporation)
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PΤ
      US 20040209869
                         A1 20041021
                          B2 20050125
      US 6846823
      US 2004-817332
                         A1 20040402 (10)
AΤ
      US 2004-536341P
                          20040113 (60)
PRAT
                          20030820 (60)
      US 2003-496502P
      US 2003-461022P
                          20030404 (60)
DT
      Utility
      APPLICATION
      HAMILTON, BROOK, SMITH & REYNOLDS, P.C., 530 VIRGINIA ROAD, P.O. BOX
LREP
      9133, CONCORD, MA, 01742-9133
CLMN
     Number of Claims: 70
ECL
      Exemplary Claim: 1
      2 Drawing Page(s)
LN.CNT 3437
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
    ANSWER 22 OF 25 USPATFULL on STN
      2003:154406 USPATFULL
AN
ΤI
      Collections of transgenic animal lines (living library)
IN
      Serafini, Tito Andrew, San Mateo, CA, UNITED STATES
ΡI
                          A1 20030605
      US 20030106074
                          A1 20020214 (10)
ΑI
      US 2002-77025
      Continuation-in-part of Ser. No. US 2001-783487, filed on 14 Feb 2001,
RLI
      PENDING
      Utility
FS
      APPLICATION
LREP
      PENNIE AND EDMONDS, 1155 AVENUE OF THE AMERICAS, NEW YORK, NY, 100362711
CLMN Number of Claims: 159
ECL
      Exemplary Claim: 1
      13 Drawing Page(s)
DRWN
LN.CNT 5667
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
    ANSWER 23 OF 25 USPATFULL on STN
L1
AN
      2003:72979 USPATFULL
ΤI
      Collections of transgenic animal lines (living library)
IN
      Serafini, Tito Andrew, San Mateo, CA, UNITED STATES
PΙ
      US 20030051266
                         A1 20030313
ΑI
      US 2001-783487
                          A1 20010214 (9)
DT
      Utility
FS
      APPLICATION
LREP PENNIE AND EDMONDS, 1155 AVENUE OF THE AMERICAS, NEW YORK, NY, 100362711
CLMN Number of Claims: 158
ECL
      Exemplary Claim: 1
DRWN
     No Drawings
LN.CNT 4818
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
    ANSWER 24 OF 25 USPAT2 on STN
AN
      2005:31472 USPAT2
ΤI
      Method of treating lower urinary tract disorders
      Landau, Steven B., Wellesley, MA, UNITED STATES
IN
      Miller, Cheryl L., Natick, MA, UNITED STATES
      Fraser, Matthew O., Apex, NC, UNITED STATES
      Dynogen Pharmaceuticals, Inc., Waltham, MA, UNITED STATES (U.S.
PA
      corporation)
PΤ
      US 7115606
                          B2 20061003
ΑТ
      US 2004-863770
                              20040607 (10)
RLT
      Continuation of Ser. No. US 2004-817332, filed on 2 Apr 2004, Pat. No.
      US 6846823
PRAI US 2004-536341P 20040113 (60)
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US 2003-496502P 20030820 (60)
      US 2003-461022P
                         20030404 (60)
DT
      Utility
FS
      GRANTED
EXNAM Primary Examiner: Owens, Amelia A.
LREP Jones Day
CLMN Number of Claims: 16
ECL
     Exemplary Claim: 1
DRWN 2 Drawing Figure(s); 2 Drawing Page(s)
LN.CNT 3189
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
L1
    ANSWER 25 OF 25 USPAT2 on STN
AN
       2004:268326 USPAT2
ΤТ
      Method of treating lower urinary tract disorders
TN
      Landau, Steven B., Wellesley, MA, United States
      Miller, Cheryl L., Natick, MA, United States
       Fraser, Matthew O., Apex, NC, United States
       Dynogen Pharmaceuticals, Inc., Waltham, MA, United States (U.S.
PA
      corporation)
ΡI
      US 6846823
                          B2 20050125
ΑI
      US 2004-817332
                              20040402 (10)
     US 2004-536341P
                          20040113 (60)
PRAI
      US 2003-496502P
                          20030820 (60)
      US 2003-461022P
                          20030404 (60)
      Utility
FS
      GRANTED
EXNAM Primary Examiner: Killos, Paul J.
LREP Hamilton, Brook, Smith & Reynolds, P.C.
CLMN Number of Claims: 62
ECL
     Exemplary Claim: 1
DRWN
      2 Drawing Figure(s); 2 Drawing Page(s)
LN.CNT 3505
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CAS INDEXING IS AVAILABLE FOR THIS PATENT.